

Palo Verde Energy Education Center

Buckeye, Arizona

CASE STUDY | government buildings



Client - APS

Rep Office - Norman Wright Mechanical

Architect - Arrington Watkins Architects

LEED Certification - LEED Gold Certified

Project Highlights:

- » 32,000 square feet
- » 13.5 million facility
- » Largest nuclear plant in the United States
- » Only nuclear plant in the world to utilize waste water
- » Energy produced is cheaper than from coal
- » Less energy emitted to the environment than a coal plant
- » Completed in 2011



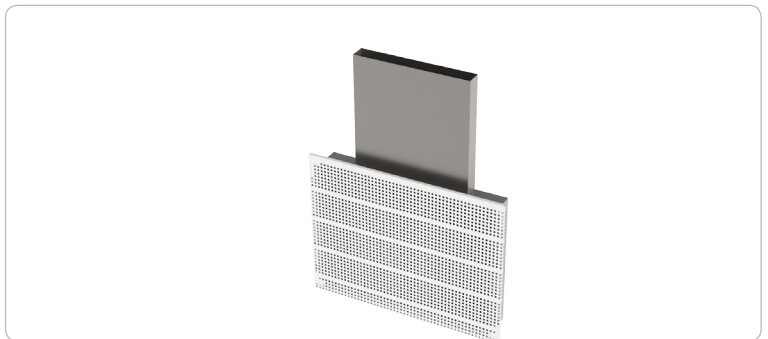
ABOUT THE PROJECT

The Palo Verde Energy Education Center (EEC) opened in 2011. The main purpose for this facility is to serve as an emergency base of operations in the event of a crisis at the Palo Verde Nuclear Generating Station (PVNGS), which is conveniently located 22 miles away. During non-emergency times, the center is used as a technical and education facility. Information from the PVNGS is displayed via live data streams and monitored closely by employees at the facility. They are able to communicate instantly with the individuals at the plant and other officials around the world if any issue arises at the nuclear plant.

The EEC was designed by Arrington Watkins Architects to be an energy-efficient, state-of-the-art building and incorporates the latest technologies in creating sustainable structures to achieve this goal. "We designed the facility to not only help officials with the dissemination and flow of information, but also make it as efficient as possible in terms of sustainability and functionality," Michael Conder, project director for Phoenix-based Arrington Watkins Architects, said. Some of the Green Building concepts utilized in this LEED Gold Certified facility are that it uses heavy insulation for the building envelope, has specialized sizing and shading on all the windows installed and the air distribution system.



TAF-R



DVIR



THE TITUS SOLUTION

The HVAC system in the EEC uses Displacement Ventilation and UnderFloor Air Distribution (UFAD). "Our design team felt that underfloor distribution of air, power, and data was going to be the best way to ensure flexibility for the multiuse functions of the building," Conder said. A Displacement Ventilation system is similar to an UnderFloor system in that it uses warmer supply air and lower pressures than a conventional overhead system. As a result, displacement ventilation systems have many of the same benefits of UFAD systems, such as longer economizer periods, potential energy savings from the warmer supply air and lower horsepower fans, and quiet operation. Both systems allow fresh, conditioned air to distribute properly throughout the center.

The main products featured in the Palo Verde Energy Education Center are the TAF-R UnderFloor diffuser and the DVIR Displacement Ventilation diffuser. The TAF-R is a GreenSpec Listed product available in either standard light gray or black. All components of the unit are constructed of a high-impact polymer material designed to resist damage from heavy foot traffic. Additional colors may be specified to match any building's interior scheme. This model can help contribute toward achieving LEED credits as well. Another benefit of the TAF-R is the ease it can be adjusted. The top of the unit can be turned clockwise or counterclockwise to reduce or add airflow into the occupied space. As an added bonus the TAF-R and the face of the DVIR are available in wood grain finish options to add elegance to the interior of the space.

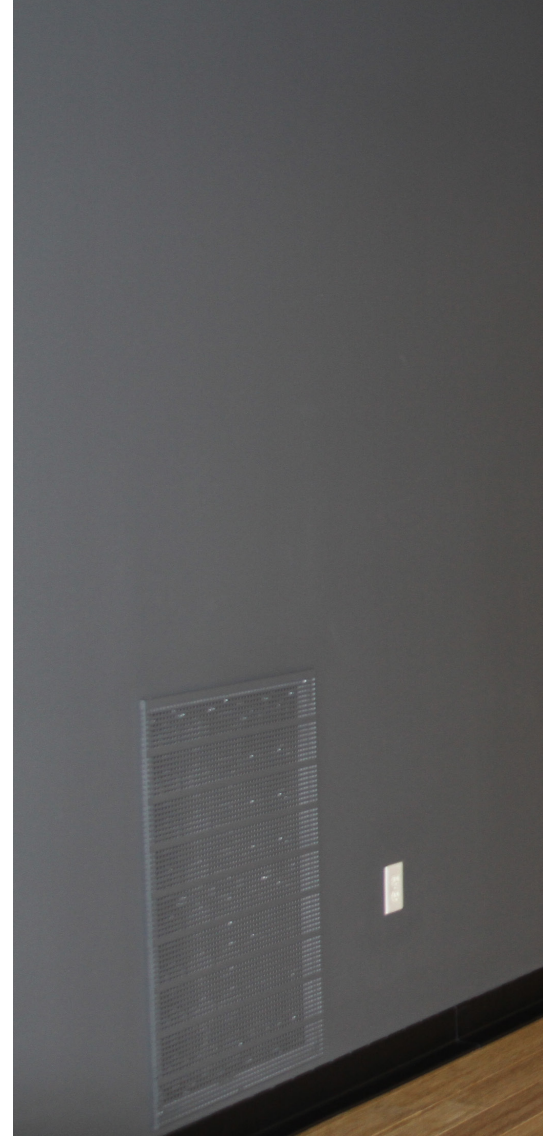
Displacement Ventilation is a great alternative to conventional overhead ceiling supply systems and operates very similar to an underfloor system. Displacement ventilation provides design flexibility, energy savings, and the highest level of indoor air quality (IAQ). The higher supply temperature and smaller air handler/system can generate energy savings. Also, the addition of more free cooling days from bringing outside air in contributes toward energy savings. On the IAQ side, DV has a ventilation effectiveness factor of 1.2 which translates to a 20% bonus when designing for ventilation requirements per ASHRAE Standard 62.1.

The DVIR is a rectangular displacement diffuser with a one-way discharge air pattern designed for flush mount applications. Constructed of galvanized steel and aluminum, the DVIR is designed for in-wall applications and supplies a large volume of air at low velocities into the occupied zone.

"These products allowed us to have multiple mechanical zones in large open areas, accommodating temperature control at an individual scale, rather than the space as a whole," Conder said.

THE END RESULT

The Palo Verde Energy Education Center is equipped to handle any emergency situation that would arise from the nearby nuclear plant. Plant personnel and government leaders would be able to relay information to news, media and law enforcement officials in the event of any emergency. Having a facility such as this ready to provide assistance at a moment's notice will definitely ease the concerns of the surrounding community in the event of a crisis.





605 Shiloh Road
Plano TX 75074
ofc: 972.212.4800
fax: 972.212.4884

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